Sensor Web Simulator
586 / Stan Scott

The Information Systems Division

Goals, Objectives, Benefits

- An objective of NASA ESE is the achievement of 10- to 14- day predictive skill in weather forecasting
- Previous ESTO studies proposed an early concept of a future weather forecasting architecture
- Vision for Exploration directs NASA to do people/robotic extraterrestrial exploration
- SDS Sensor Web (SW) Simulator (SWS) design would be used in future activities in which the simulator would be built and tested, to support goals above

Goals, Objectives, Benefits (continued)

- First goal of using the SWS is to test and validate technology for integrating SW weather forecasting components
  - Future Observing Platforms simulated using derivative of Observing System Simulation Experiments (OSSEs)
  - Data Assimilation System could request that control centers command Observing Platforms to acquire needed data
  - Quantify SW value added to resulting scientific products
- The second goal is to design the SWS to support the Exploration Initiative
  - Modify design and ensure sufficient flexibility to support extraterrestrial weather forecasting
  - Investigate addition of space weather forecasting component

Approach

- Study tasks using Revolutionary Aerospace Systems Concepts (RASC) funding initiated with two contractors
  - Northrop Grumman Information Technology/ TASC to develop SWS requirements and preliminary design, started December 2003
  - Science Applications International, Inc. (SAIC) to address technical challenges of implementing OSSEs into the SWS framework, started June 2003

Results, Status, Next Steps

- TASC completed 2 documents in June 2004 under RASC:
  - SWS Requirements
  - SWS Preliminary Design
- TASC investigating feasibility of using historical weather pattern data base in SWS weather analysis components, using ISD funding
- SAIC produced document describing transition of OSSE software to Simulated Observation Generator (SOG) component of SWS, completing RASC task in June 2004

Results, Status, Next Steps (continued)

- SDS staff directed to stop SWS work in early November 2004; work now has resumed
- SAIC has no FY05 SWS funding

Results, Status, Next Steps (continued)

- TASC status
  - Conclusion of weather patterns analysis work and preparation of presentation from this task were suspended in early November
  - TASC task resumed week of January 17:
    - Complete work above
    - By March 11, complete:
      - Identify specific design areas where COTS/GOTS tools could be used
      - Identify specific COTS/GOTS tools that could support SWS functionality
    - New task will be needed to continue from March 12 through September

Results, Status, Next Steps (continued)

- Future steps: identify funding to continue SWS development
  - Develop additional SWS requirements pertaining to extraterrestrial weather
  - Implement partial Earth SWS prototype and evaluate it
  - Develop detailed design of Earth SWS
  - Code and test Earth SWS
  - Provide early version of Earth SWS to selected investigators
  - Prototype, develop detailed design, code and test extraterrestrial SWS